What is the condition of the Lower Green and Tradewater watersheds?

Description

This region includes the Tradewater River and Lower Green River basins, plus independent tributaries that drain to the Ohio River. These watersheds drain approximately 5,674 square miles in all or part of 17 counties in western Kentucky. Cities in the region include Hawesville, Madisonville, Morgantown, Henderson, Hopkinsville, Owensboro, Calhoun, Princeton, and Marion. Major impoundments include Rough River Lake, Caneyville Reservoir, Grapevine Lake, Lake Beshear, Lake Washburn, Lake Pewee, Lake Luzurne, Lake Malone, and Moffit Lake.

Forests

Due to the highly productive soils found in the Tradewater Region, the woodlands of this area are mostly smaller tracts of timber that are remnants of forests that were cleared for agricultural purposes. Both upland and bottomland hardwoods of the oak-hickory forest type dominate the region; cherrybark oak is particularly important, both silviculturally and economically. Bottomland forests, in particular, provide several significant watershed benefits. In addition to filtering water before it reaches the main watercourse, trees help to stabilize these areas by holding soil in place with their root structures. These areas are also particularly rich in wildlife resources because of the valuable habitat that they provide. The conditions that allowed for these forests to develop naturally have been altered by man-made changes, usually in the drainage patterns of the surrounding farmland. Even slight changes in the amount of water in an area can affect what tree species can survive and flourish there.

The forestland of the Lower Green Region consists of upland hardwoods of the oak-hickory forest type with a small percentage of bottomland hardwoods also present. Most of the timberland in this region consists of areas that were not cleared for agricultural purposes, mostly due to topography that was not ideal for farming. The majority of the woodlands found here consist of third- and fourth-generation trees. Regeneration has occurred mainly through the sprouting of stumps from trees that have been harvested. The oaks are probably the most important tree family in the area, both in terms of the number of species present and economic value. White oak is the most dominant of these, along with northern red oak, black oak, and cherrybark oak. Yellow poplar, hickories, maples, ash, and black walnut can also be found consistently throughout the region.

Water Quality

Water quality in the region is generally good. To date, 1,176 miles of stream (19 %) of a total of 6,192 miles have been monitored and assessed for water quality and biological integrity. The results of these surveys have revealed that approximately 67 percent of the assessed streams are fully meeting water quality standards. Streams not meeting standards are shown on the centerfold map.

Agriculture

Kentucky agricultural producers, although faced with many challenges, continue to look forward and anticipate opportunities upon entering the 21st Century. The number one cash crop of tobacco has experienced quota reductions, pressing agriculturists to explore new areas of opportunity and development. Kentucky's producers are challenged with analyzing new technology and marketing opportunities as they adapt to diversified operations.

The Lower Green River and direct tributaries to the Ohio River drain most of the Western Kentucky coalfields, and the

Contaminants and their effects

Nutrients – nitrogen and phosphorus can cause an increase in algal growth; when the algae die, their decomposition removes oxygen from the water, resulting in low dissolved-oxygen concentrations. The breakdown of some nitrogen compounds by bacteria also lowers dissolved oxygen.

Pesticides – runoff of pesticides into streams results in harm and/or death to beneficial plants and animals that live in or use the water.

Pathogens – a high concentration of pathogens (bacteria, viruses, protozoans) may cause illness in humans and other animals and, in some instances, can cause death.

Sediments – the result of soil erosion causes reservoirs to lose capacity as the silt settles out, reduces suitable habitat in streams, and transports attached contaminants (nutrients and metals).

Metals – are toxic to fish, humans, and other animals and can cause illness, deformities, and death.

Western Kentucky Farm

Western Kentucky coal mine

Tradewater River drains the far western area. Portions of Webster, Union, and Christian counties drain into the Tradewater basin. In 1999, Webster County ranked eighth in Kentucky for cash receipts from livestock production, Union County ranked fourth for cash receipts from crops, and Christian County ranked first for cash receipts from crops (Kentucky Agricultural Statistics 1999-2000).

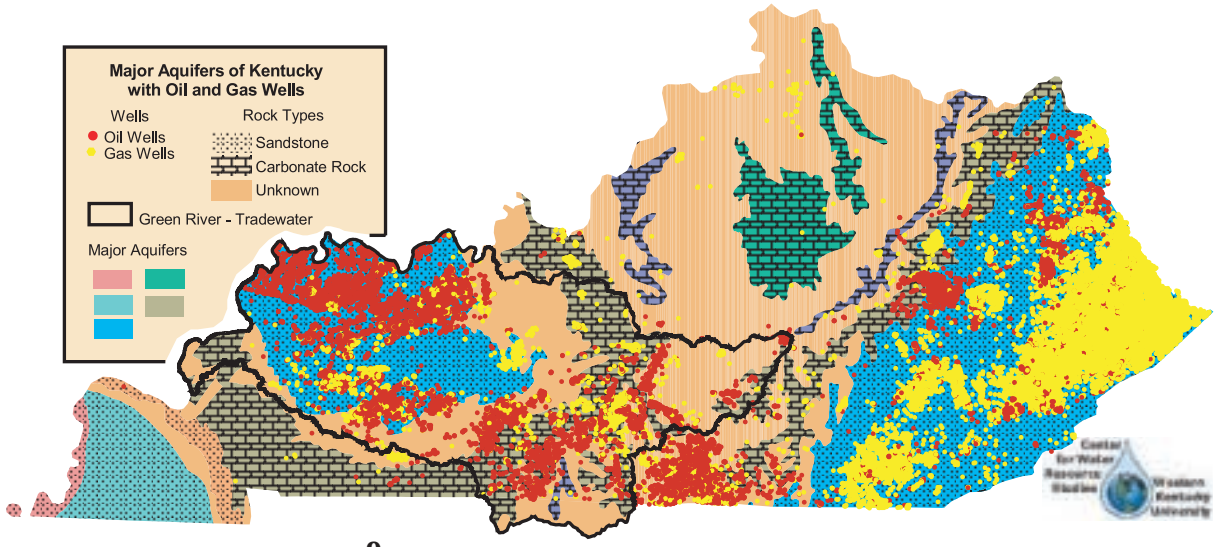
Oil and Gas Production

Oil reserves tend to float on prehistoric brine water, which has salt concentrations higher than today's oceans. The salt water becomes a by-product of lifting crude oil to the surface. While the current most environmentally acceptable method of disposal is to inject it back into the subsurface, prior to regulation this brine was routinely dumped into creeks and rivers. Streams that have intermittent flow are more vulnerable to brine impacts. Brine spills to soil have the potential of impacting groundwater and surface water for users down gradient.

Coal Mining

Coal mine sites active after 1972 are regulated by the Department of Surface Mining Reclamation and Enforcement (DSMRE), and sites mined prior to 1972 are considered "pre-law" and are regulated by the department's Division of Abandoned Mine Lands (AML). Areas mined "pre-law" were unprotected; consequently, environmental requirements were minimal or nonexistent. Erosion, loss of vegetation, and acid mine discharge were common on old mine sites, or AMLs. Iron and manganese leached from AML sites and colored the stream bed with a bright red coating. Discharges from older reclamation sites may have vegetative cover and silt control, yet still have redwater discharges from old mine works under the surface mine reclamation work. Current practices are available to fix these areas, but the cost is high. Creeks in the older coalfields of Western Kentucky have wildlife habitat options, wetland options, and grass cover reclamation. Since these creeks have shallower slopes, there are far fewer blackwater complaints compared to the steep slopes encountered in Eastern Kentucky coalfields.

Water quality is impacted in AML sites not only by acid mine runoff, but by siltation and blackwater releases from impounded coal slurry and erosion of coal refuse piles. In the western coalfields, gentle slopes and flat land lead to the formation of wetlands from siltation deposits. These lie in drainage channels of Greasy Creek, Elk Creek, Flat Creek, Drakes Creek, Clear Creek, Buffalo Creek, Richland Creek,



Hurricane Creek, Copper Creek and Copperas Creek, and parts of the Tradewater River, with acid mine runoff causing the greatest impact on water quality. During the last 30 years, AML reclamation sites and KPDES permitting have improved water quality and allowed for the reestablishment of fishable stream segments.

Special Resources

Many parts of the state have been set aside and given special protection because of their natural qualities and scenic beauty. While these lands are managed for their long-term protection, many are open to the public. In addition to providing a safe haven for rare species and unique ecological systems, these areas provide outstanding scenery and recreational opportunities. Hiking, wildlife viewing, canoeing and kayaking, and other non-motorized sports can be enjoyed over much of these areas. Contact the various agencies listed in the back of this document for more information.

The Lower Green/Tradewater region contains the Pennyrile State Forest and three state parks: John James Audubon, Ben Hawes, and Rough River state parks. Plus, there are four state wildlife management areas in the region: Henderson/Sloughs, Higginson-Henry, Peabody, Rough River Lake, and Jones-Keeney state wildlife management areas. The Kentucky Department of Fish and Wildlife Resources administers state wildlife management areas.

Proposed National Wildlife Refuge

Establishment of a Green River National Wildlife Refuge (NWR) in Henderson County has been proposed for the purpose of restoring and managing a valuable wetland complex for the benefit of migratory birds. Land surrounding the confluence of the Green River and Ohio River is within the proposed refuge boundary. Historically, this area was part of a large bottomland hardwood forest, which had extensive oak, hickory, and native pecan trees. Currently, the area consists of ridge and swale farmland, river-scar oxbows, several sloughs, wet depressional areas, and a small amount of bottomland hardwoods.

Waterfowl are plentiful; on one occasion, more than 10,000 ducks and 8,000 geese were observed feeding and resting in the flooded bottoms. Waterfowl species most commonly seen in the project area include mallard, Canada geese, blue-winged and green-winged teal, gadwall, American wigeon, wood duck, redhead, canvasback, and ring-necked duck. There are also infrequent observations of bufflehead, lesser scaup, American black duck, snow geese, and white-fronted geese. Significant populations of migratory waterfowl are observed on the project area only when flood conditions are right. Because the area was previously converted to agricultural land, the natural flooding and flow conditions of a bottomland hardwood forest that promote wildlife were lost. Therefore, the benefits to fish and wildlife resources from the proposed management activities would be greatly enhanced by improvement of water quality in the Green River system.

Species of Concern

The quality of spawning habitat in the basin for fish species that need hard, relatively sediment-free stream floors has been significantly degraded by the development and maintenance of navigation corridors in the Green/Tradewater River basin and from gravel dredging and flood control efforts in the rivers and their tributaries. Of particular concern are the sturgeon chub, sicklefin chub, lake sturgeon, paddlefish, northern cavefish, eastern sand darter, spotted darter, and longhead darter. The alligator gar has also experienced population declines throughout the basin, most likely a result of the loss of floodplain waters and wetlands adjacent to the major rivers. The copperbelly water snake also occurs in the basin. This species is currently protected by a Candidate Conservation Agreement to preclude its listing as federally threatened in Kentucky.

State Nature Preserves

Preserves within the watershed include the John James Audubon State Park Nature Preserve. This area is managed by the Kentucky State Nature Preserves Commission to protect resident plants and animals, including many threatened and endangered species. Nine stream segments within the Lower Green and Tradewater basin, totaling 217 stream miles, contain rare species.

Wetlands

Wetlands provide essential watershed functions related to floodwater storage, groundwater flow moderation, sediment removal, nutrient cycling, and water purification. They provide diverse habitats for wildlife foraging and reproduction, and essential refuge for a wide variety of mammals, reptiles, amphibians, and fish. Three broad categories of wetlands exist within the Green/Tradewater River basin: lacustrine (lake-like), palustrine (swamp-like), and riverine (associated with surface water channels). Water permanence, gradient, water velocity, substrate, extent of floodplain development, and vegetation types further define these systems.